

Waste Management Plan for the Expedited Response Action for 200 West Area Carbon Tetrachloride Plume and the 200-ZP-1 and 200-PW-1 Operable Units

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management
Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200



**United States
Department of Energy**
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Waste Management Plan for the Expedited Response Action for 200 West Area Carbon Tetrachloride Plume and the 200-ZP-1 and 200-PW-1 Operable Units

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TABLE OF CONTENTS

1.0	PURPOSE.....	1
2.0	PROJECTED WASTE STREAMS.....	2
3.0	WASTE DESIGNATION AND DISPOSAL.....	3
4.0	WASTE STREAM-SPECIFIC MANAGEMENT.....	5
4.1	DRILL CUTTINGS.....	5
4.2	SPENT GRANULAR ACTIVATED CARBON AND FILTER ELEMENTS	5
4.3	LIQUIDS.....	5
4.3.1	Purgewater	5
4.3.2	Condensate from the Expedited Response Action Passive and Active Vapor Extraction Systems	6
4.3.3	Algae Removal Liquids	6
4.3.4	Liquids from Unplanned Releases	6
4.3.5	Decontamination Fluids	6
4.3.6	Sample Analysis and Screening Liquids.....	7
4.4	MISCELLANEOUS SOLID WASTES	7
4.5	DECOMMISSIONING DEBRIS	8
4.6	SPENT OR UNUSABLE CHEMICALS/REAGENTS AND RETURNED SAMPLE WASTE.....	8
5.0	PACKAGING AND LABELING.....	8
6.0	STORAGE/TRANSPORATION.....	9
7.0	REFERENCES.....	15

APPENDICES

A	200-ZP-1 WELL LISTS	A-i
B	EXPEDITED RESPONSE ACTION VAPOR EXTRACTION/MONITORING LOCATIONS	B-i

FIGURES

1.	200-ZP-1 and 200-PW-1 Waste Storage Location.	10
2.	200-ZP-1 Pump-and-Treat Site Extraction, Injection, and Monitoring Locations.	11
3.	Well Monitoring and Hydrologic Test Locations (Tables A-1, A-2, and A-3).	12
4.	200-PW-1 Soil Vapor Extraction/Monitoring Locations <2 m Depth.	13
5.	200-PW-1 Vapor Extraction/Monitoring Locations >2 m Depth.	14

ACRONYMS

CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
CFR	<i>Code of Federal Regulations</i>
CWC	Central Waste Complex
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
ERA	expedited response action
ERC	Environmental Restoration Contractor
ERDF	Environmental Restoration Disposal Facility
ETF	Effluent Treatment Facility
GAC	granular activated carbon
IDW	investigation-derived waste
OU	operable unit
PSTF	Purgewater Storage and Treatment Facility
RCF	Radiological Counting Facility
WAC	<i>Washington Administrative Code</i>

METRIC CONVERSION CHART

Into Metric Units			Out of Metric Units		
<i>If You Know</i>	<i>Multiply By</i>	<i>To Get</i>	<i>If You Know</i>	<i>Multiply By</i>	<i>To Get</i>
Length			Length		
inches	25.4	millimeters	millimeters	0.039	inches
inches	2.54	centimeters	centimeters	0.394	inches
feet	0.305	meters	meters	3.281	feet
yards	0.914	meters	meters	1.094	yards
miles	1.609	kilometers	kilometers	0.621	miles
Area			Area		
sq. inches	6.452	sq. centimeters	sq. centimeters	0.155	sq. inches
sq. feet	0.093	sq. meters	sq. meters	10.76	sq. feet
sq. yards	0.836	sq. meters	sq. meters	1.196	sq. yards
sq. miles	2.6	sq. kilometers	sq. kilometers	0.4	sq. miles
acres	0.405	hectares	hectares	2.47	acres
Mass (weight)			Mass (weight)		
ounces	28.35	grams	grams	0.035	ounces
pounds	0.454	kilograms	kilograms	2.205	pounds
ton	0.907	metric ton	metric ton	1.102	ton
Volume			Volume		
teaspoons	5	milliliters	milliliters	0.033	fluid ounces
tablespoons	15	milliliters	liters	2.1	pints
fluid ounces	30	milliliters	liters	1.057	quarts
cups	0.24	liters	liters	0.264	gallons
pints	0.47	liters	cubic meters	35.315	cubic feet
quarts	0.95	liters	cubic meters	1.308	cubic yards
gallons	3.8	liters			
cubic feet	0.028	cubic meters			
cubic yards	0.765	cubic meters			
Temperature			Temperature		
Fahrenheit	subtract 32, then multiply by 5/9	Celsius	Celsius	multiply by 9/5, then add 32	Fahrenheit
Radioactivity			Radioactivity		
picocuries	37	millibecquerel	millibecquerels	0.027	picocuries

1.0 PURPOSE

This waste management plan establishes the requirements for the management and disposal of waste associated with the actions stipulated in the *Declaration of the Record of Decision for the 200-ZP-1 Operable Unit* (EPA et al. 1995) and the *Action Memorandum: Expedited Response Action Proposal for 200 West Area Carbon Tetrachloride Plume* (EPA 1992). The 200-ZP-1 interim action involves pumping groundwater from selected well locations; treating the water to remove carbon tetrachloride, chloroform, and trichloroethylene in the groundwater of the 200 West Area using air stripping and granular activated carbon (GAC); and re-injecting the treated water into the aquifer through upgradient injection wells. The 200 West Area carbon tetrachloride plume expedited response action (ERA) involves both passive and active vapor extraction. The vapor is passed through GAC to absorb and retain carbon tetrachloride. This plan supercedes all previously issued waste control plans and/or waste management plans, including the waste management section in the 200-ZP-1 remedial design report (DOE-RL 1996).

This document includes the requirements for the management and disposal of waste generated from activities such as monitoring conducted at the 200-ZP-1 Operable Unit (OU) groundwater wells and the ERA vapor extraction/monitoring wells. This waste management plan applies to waste from the wells included in Appendices A and B.

Information concerning the 200-ZP-1 pump-and-treat system, ERA, and monitoring is contained in the following documents:

- *200-ZP-1 IRM Phase II and III Remedial Design Report* (DOE-RL 1996)
- *NPL Agreement/Change Control Form 123* (DOE-RL and EPA 2000)
- *Expedited Response Action Proposal (EE/CA and EA) for 200 West Area Carbon Tetrachloride Plume* (DOE-RL 1991)
- *Sampling and Analysis Plan for the 200-ZP-1 Groundwater Monitoring Well Network* (DOE-RL 2002).

The activities that will likely generate waste include, but are not limited to, the following:

- Construction, operation, maintenance, and decommissioning of the groundwater and vadose zone remediation systems
- Groundwater well and vadose zone well extraction/monitoring well installation
- Well development, sampling, maintenance, and decommissioning
- Water-level and other in situ groundwater or vadose zone measurements

- Process sampling and screening/analysis of samples
- Decontamination of equipment and material
- Aquifer testing, geophysical logging, and treatability studies (see note below).

NOTE: Testing, treatability studies, or other special activities not specifically identified in the above-referenced documents will be evaluated with the regulatory agencies for coverage under this plan. A supplement to this document or a separate waste management plan or waste control plan in accordance with the *Environmental Restoration Program Strategy for Management of Investigation-Derived Waste* (Ecology et al. 1999) may be required.

Environmental Restoration Contractor (ERC) site-specific waste management instruction(s) will be developed as needed for the various activities identified above in order to implement the requirements identified in the following sections.

2.0 PROJECTED WASTE STREAMS

Projected waste streams include the following:

- Drill cuttings (both dry soil and saturated slurries)
- Spent GAC and filter elements
- Liquids including, but not limited to, the following:
 - Purgewater generated during well installation, development, testing, monitoring, maintenance, decommissioning, and decanting of saturated soils
 - Water from draining GAC
 - Condensate (i.e., knockout water) from the passive and active vapor extraction systems
 - Algae treatment fluids
 - Decontamination fluids
 - Process sampling and screening analysis liquids
 - Water from unplanned releases

- Miscellaneous solid waste including, but not limited to, the following:
 - Filter paper, syringes, wipes, personal protective equipment, cloth, plastic, equipment, tools, pumps, wire, metal and plastic piping, air stripper tower packing, and materials from cleanup of unplanned releases
- Decommissioning debris such as concrete, wood, rebar, metal/plastic pipe and screens, wire, bentonite/sand/gravel, equipment, pumps, and tanks (includes scrap/used equipment from dismantling ERA vapor extraction system equipment)
- Spent/excess chemicals/reagent and used oil
- Sample-related waste from analysis/screening activities conducted at the 200-ZP-1 mobile laboratory and the Radiological Counting Facility (RCF).

3.0 WASTE DESIGNATION AND DISPOSAL

Waste will be designated in accordance with *Washington Administrative Code* (WAC) 173-303 using process knowledge, historical analytical data, and/or analyses of samples as identified in the referenced documents or sampling and analysis plans, as appropriate. The 200-ZP-1 OU has an extensive groundwater well network. Several years of characterization data, pump-and-treat system data, and ERA operational data have been obtained that can be used as the basis for water designation.

Groundwater associated with the 200-ZP-1 OU has been determined to be "F001" (carbon tetrachloride), "F002" (methylene chloride), "F003" (acetone, methyl isobutyl ketone), "F004" (o-cresol, m-cresol, p-cresol), and "F005" (methyl ethyl ketone) listed waste codes. Extracted groundwater, spent GAC, decontaminated equipment, and other materials that come into contact with the groundwater will be assigned the "F001" through "F005" listed waste codes. Extracted vapor from the 200-ZP-1 and 200-PW-1 OUs contains "F001" listed waste codes. Extracted vadose zone vapor, spent GAC, decontaminated equipment, and other materials that come into contact with the vadose zone extracted vapor will be assigned the "F001" listed waste codes.

Spent GAC is sent offsite for regeneration at a U.S. Environmental Protection Agency (EPA)-approved facility and returned for re-use in the treatment systems in accordance with 40 *Code of Federal Regulations* (CFR) 300.440. The GAC that cannot be regenerated and other nonradiologically contaminated solid wastes designated as "F001" through "F005," or "F001" listed wastes that are land disposal restricted due to greater than 10% organic carbonaceous waste will be disposed offsite at an appropriate facility, unless a "contained-in determination," is obtained in accordance with 40 CFR 261. Organic carbonaceous waste that is determined by the EPA to no longer contain a listed waste may be disposed at the Environmental Restoration Disposal Facility (ERDF), provided that the waste acceptance criteria are met. Other

contaminated solid waste (e.g., used equipment or drill cuttings that meet the ERDF waste acceptance criteria or that can be treated to meet the criteria) will be disposed at the ERDF.

Wastes that are sampled and determined to have a concentration below the *Model Toxics Control Act* Method B health-based levels, or 100 times the maximum concentration levels (WAC 173-340-740[3]), as appropriate, may be presented at a later time for review of applicability to a "contained-in" determination by EPA.

Wastes may be treated at the OU or meet ERDF's waste acceptance criteria. The EPA shall approve any treatment necessary to meet the disposal facility's waste acceptance criteria. The land disposal restriction requirements in place at the time that the Record of Decision for 200-ZP-1 and the action memorandum for 200-ZP-2 (since redesignated at 200-PW-1) were signed must be met. Treatment is not required for waste that contains concentrations of carbon tetrachloride below 6 mg/kg, in accordance with the universal treatment standards (40 CFR 268.48). Free liquids must also be eliminated before disposal. Waste that does not meet the waste acceptance criteria may be stored at the Central Waste Complex (CWC) (mixed waste) or sent offsite for disposal (nonradioactive), as appropriate, as authorized by the EPA.

Miscellaneous solid waste and demolition debris that has contacted contaminated media may be disposed at the ERDF as described above. Miscellaneous solid waste and demolition debris that are nondangerous and have been radiologically released may be disposed in an offsite solid waste landfill or onsite demolition landfill (for demolition waste), as appropriate. Nondangerous, uncontaminated soils and slurries may be placed on the ground near the point of generation. Waste handling and disposal options are further described in Section 4.0.

Contaminated liquids will be returned to the influent side of the pump-and-treat system, or will be sent to the Purgewater Storage and Treatment Facility (PSTF) or the Effluent Treatment Facility (ETF), as appropriate. Small volumes of liquid that have been stabilized may also be disposed at the ERDF if the waste meets the facility's waste acceptance criteria. Liquid waste that does not meet the acceptance criteria for any of these facilities may be stored at the CWC (mixed waste) or sent offsite for disposal (nonradioactive waste), as authorized by the EPA. Used oil will be sent offsite for recycling or disposal. Spent or unusable chemicals/reagents will also be generated during field sampling and analysis and will require disposal based on waste designation. Liquids such as purgewater or decontamination fluids that are nondangerous liquids below purgewater collection criteria (Izatt 1990) may be discharged to the ground.

Offsite facilities that receive *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) contaminated waste must be deemed acceptable by the EPA in accordance with 40 CFR 300.440. The exceptions are used oil, expired/excess chemicals, and solid waste that has not contacted contaminated media and is sent for recycling or disposal at an offsite solid waste landfill. In accordance with 40 CFR 300.440, an offsite determination is also required prior to shipment of waste to the CWC.

4.0 WASTE STREAM-SPECIFIC MANAGEMENT

The following subsections describe how the various waste streams will be managed.

4.1 DRILL CUTTINGS

Drill cuttings (i.e., soils and slurries) from outside an area of known or suspected contamination will be collected in stockpiles near the point of generation. Soils and slurries from known or suspected contamination areas will be placed on a tarp or containerized. Contained soil slurries will be decanted, and free liquids remaining in the container will be eliminated by evaporation and/or the addition of sorbent material prior to disposal, as necessary. Decanted water will be managed as purgewater. Soils and slurries that are not contaminated with a listed waste source, that do not designate as a dangerous waste, are below 40 CFR 268.40 levels and *Model Toxics Control Act* Method B soil cleanup standards (WAC 173-340), and have been released from a radiological perspective may be placed on the ground near the point of generation. Decanting slurries and eliminating free liquids are authorized without prior approval.

4.2 SPENT GRANULAR ACTIVATED CARBON AND FILTER ELEMENTS

The spent GAC is sent offsite for regeneration and returned for re-use in the groundwater and vapor extraction treatment systems. The pump-and-treat system is designed with in-line filters to collect fine particulates present in the groundwater. Fine particles collect on filters located in the filter housings. The filter elements are removed from the filter housing and replaced as needed to maintain system efficiency. The filters are dewatered and transferred into appropriate containers for offsite shipment.

4.3 LIQUIDS

Various liquid wastes are generated from operation and maintenance of the groundwater and vapor treatment systems and from well-related activities (as described in Section 2.0). Liquid waste streams will be processed through the 200-ZP-1 pump-and-treat system if technically feasible. Introduction of contamination that is not found in the specific OU is not allowed; only unaltered liquids will be returned to the system. Fluids that contain additives (e.g., fluids used for decontamination or reagents added for field screening or analysis) will not be allowed. Introduction of liquid containing algae growth into the treatment system should be avoided.

4.3.1 Purgewater

Purgewater and “perched” aquifer water are generated during well installation, development, testing, monitoring, sampling, maintenance, and decanting of saturated soils during drilling activities. Currently the Hanford Site purgewater strategy requires containment of all 200 West Area purgewater.

4.3.2 Condensate from the Expedited Response Action Passive and Active Vapor Extraction Systems

Condensate (i.e., knockout water) is generated from operation of both the passive and active vapor extraction systems used for the ERA. This knockout water will be processed through the 200-ZP-1 pump-and-treat system. In the event that the water cannot be processed through the 200-ZP-1 pump-and-treat system, arrangements will be made for treatment and/or disposal of the liquid at an appropriate facility (e.g., ETF).

4.3.3 Algae Removal Liquids

Water is generated during the algae removal process of the 200-ZP-1 air stripper tower. This liquid will be contained and sent to the PSTF or ETF.

4.3.4 Liquids from Unplanned Releases

Water generated from unplanned releases that is contained within the pump-and-treat system will be returned to the influent side of the pump-and-treat system, if appropriate, or to the PSTF or ETF. If a release occurs, notification to the project environmental lead or the ERC primary spill point of contact is required. The reporting requirements will be met as required by U.S. Department of Energy (DOE) O 232.1A. The ERC spill reporting point of contact will determine the actions necessary to address the spill. The EPA Hanford Project Office will be notified of significant spills that require reporting to the National Response Center for exceedance of CERCLA and *Emergency Planning and Right-to-Know Act of 1986* release reporting requirements (EPA 1998). The EPA Hanford Project Office will also be notified of any reporting made to the Washington State Department of Ecology spill hotline in accordance with WAC 173-303-145.

The piping leading to and from the 200-ZP-1 pump-and-treat system process, extraction, and injection buildings are double-walled with leak detection equipment. The extraction, injection, process buildings and the air stripper tower area also contain leak detection equipment. The 200-ZP-1 pump-and-treat system is designed to shut down the system upon detection of leaks.

4.3.5 Decontamination Fluids

Decontamination fluids (i.e., water and/or nonhazardous cleaning solutions) generated from cleaning equipment and tools used within the carbon tetrachloride plume will be treated as listed waste and contained. Decontamination fluids generated from cleaning equipment and tools outside the carbon tetrachloride plume may be discharged to the ground if the fluids are below the purgewater collection criteria. Decontamination fluids above the collection criteria will be contained and transported to the PSTF, ETF (if the waste acceptance criteria can be met), or other facility, as authorized by the EPA. Small volumes of decontamination fluids may be stabilized to eliminate free liquids and then disposed at the ERDF if the waste acceptance criteria can be met.

Decontamination of some equipment (e.g., split-spoon samplers) may be conducted at either the 600 Area centralized location and/or the Waste Sampling and Characterization Facility because decontamination and containment systems are already established at these locations. The waste generated at these facilities will be managed in accordance with applicable regulations.

Water washing, spraying, or high-pressure steam cleaning of equipment and tools with or without nonhazardous cleaning solutions meets the alternative treatment standards for hazardous debris identified in 40 CFR 268.45, Table 1. The equipment and tools will no longer be considered to be contaminated with "F001" through "F005" listed waste, provided that the equipment and tools meet the definition of a clean debris surface, as described in 40 CFR 268.45. "Clean debris surface" means that the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste, except that residual staining from soil and waste consisting of light shadows, light streaks, or minor discolorations, and soil and waste in cracks, crevices, and pits may be present, provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area. By signing this agreement the EPA agrees with this treatment plan, and no separate plan is required.

Equipment and tools having only incidental nonroutine contact with contaminated groundwater, having contacted only carbon tetrachloride vapors, or that may be destroyed by water emersion will be air dried to removed volatile organics. After the materials have been dried, the equipment/tools will be considered to be no longer contaminated with "F001" through "F005" listed waste, in accordance with WAC 173-303-070(2)(c)(ii).

4.3.6 Sample Analysis and Screening Liquids

Unaltered liquid waste generated during sample screening and analysis will be managed as purgewater (as described in Section 4.3.1). Altered samples will be contained and disposed at the ETF, ERDF, or other appropriate facility (depending on the waste designation), as authorized by EPA. Some liquids may be neutralized and/or stabilized to meet the disposal facility's waste acceptance criteria.

4.4 MISCELLANEOUS SOLID WASTES

In addition to the spent GAC and filter elements addressed in Section 4.1, other solid waste will be generated during all phases of remediation, operation, and maintenance. Solid wastes are also generated during well-related activities (see Section 2.0). Miscellaneous solid waste that has contacted potentially contaminated materials will be segregated from other materials. Miscellaneous solid waste will be placed in containers that are appropriate for the material and the disposal facility. Miscellaneous solid waste that has contacted contaminated media may be disposed at the ERDF if the facility's waste acceptance criteria are met. If the waste acceptance criteria cannot be met, the waste will be shipped to the CWC for storage or to an offsite facility, as appropriate, depending on the waste designation. Miscellaneous solid waste that has not contacted contaminated media and contact miscellaneous solid waste that is nondangerous and

has been released for radionuclides may be disposed at an offsite solid waste landfill or recycled, as appropriate.

4.5 DECOMMISSIONING DEBRIS

Decommissioning debris (e.g., concrete, wood, rebar, metal/plastic pipe and screens, wire, bentonite/sand/gravel, equipment, and pumps) is generated during the decommissioning of wells and remediation equipment. Debris that has contacted contaminated media may be disposed at the ERDF if the facility's waste acceptance criteria are met, or in another onsite- or offsite-approved facility if the waste acceptance criteria cannot be met. Contact debris that is nondangerous and radiologically released, or solid waste that has not contacted potentially contaminated materials will be disposed offsite at a solid waste landfill or an onsite demolition landfill, or may be recycled, as appropriate.

4.6 SPENT OR UNUSABLE CHEMICALS/REAGENTS AND RETURNED SAMPLE WASTE

Used oil is generated during operation of the treatment systems and will be sent offsite for recycling or disposal, as appropriate. Spent/unusable (e.g., expired) chemicals/reagents that are generated during implementation of the interim action will be managed and disposed as appropriate for the specific chemical or reagent. Screening and analysis of solids and liquids may be conducted at the 200-ZP-1 mobile sample laboratory and/or the RCF. The RCF samples are authorized for return to the 200-ZP-1/ERA central storage area for temporary storage pending disposal in accordance with this plan.

5.0 PACKAGING AND LABELING

Materials requiring collection will be placed in containers appropriate for the material and the receiving facility. Drums may be used for some materials (e.g., drill cuttings); however, packaging for large/irregular waste (e.g., casing or air stripper tower packaging) or large-volume waste (e.g., GAC) may include containment other than drums. The packaging shall ensure that contaminants do not migrate and will protect against environmental degradation. The packaging may include, but is not limited to, plastic wrap, 4-ft by 4-ft by 8-ft boxes, ERDF containers, GAC canisters, and roll-off boxes.

Low-volume miscellaneous materials associated with activities such as groundwater well sampling may be bagged, taped, and labeled with the well number at the well head. The bagged material will be transported in a protective manner (i.e., containment of the material is maintained) while proceeding from well to well in the OU. Daily, and upon arrival at the storage location, the materials will be placed in an accumulation drum and managed as waste within the OU. The materials may also be disposed directly at the ERDF without storage, as appropriate.

Packaging and labeling during storage and transportation must meet WAC 173-303 and U.S. Department of Transportation (DOT) requirements, as appropriate. Packaging exceptions to DOT requirements that are documented and provide an equivalent degree of safety during transportation may be used for onsite waste shipments. Containers will be labeled and marked appropriately to match the designation established for each waste stream. The containers will be labeled as containing investigation-derived waste (IDW) or remediation waste, as appropriate. The containers will be sealed and shipped to the identified disposal facility.

6.0 STORAGE/TRANSPORTATION

The amount of waste stored at the storage area should be kept to a minimum. Full containers should be prepared for disposal as quickly as economically feasible. Any designated dangerous waste will be stored in a temporary storage area meeting the substantive requirements of WAC 173-303-630 and will be inspected weekly. Some of the waste (e.g., spent GAC and well-related miscellaneous solid waste) will be stored at the 200-ZP-1/ERA central storage area (Figure 1), and other waste will be accumulated at the 200-ZP-1 pump-and-treat facility (e.g., filters and sampling waste). Some waste (e.g., drill cuttings) may be temporarily accumulated near the point of generation. The EPA project manager has agreed that any IDW that is generated under this plan may be stored for up to one year. An extension is required to be approved by EPA for storage of IDW beyond one year.

Radioactive waste will be managed separately from nonradioactive waste. Container tracking and traceability will be controlled through the Hanford Site Solid Waste Information and Tracking System. The containers will be sealed and shipped to the identified disposal facility.

Figure 1. 200-ZP-1 and 200-PW-1 Waste Storage Location.

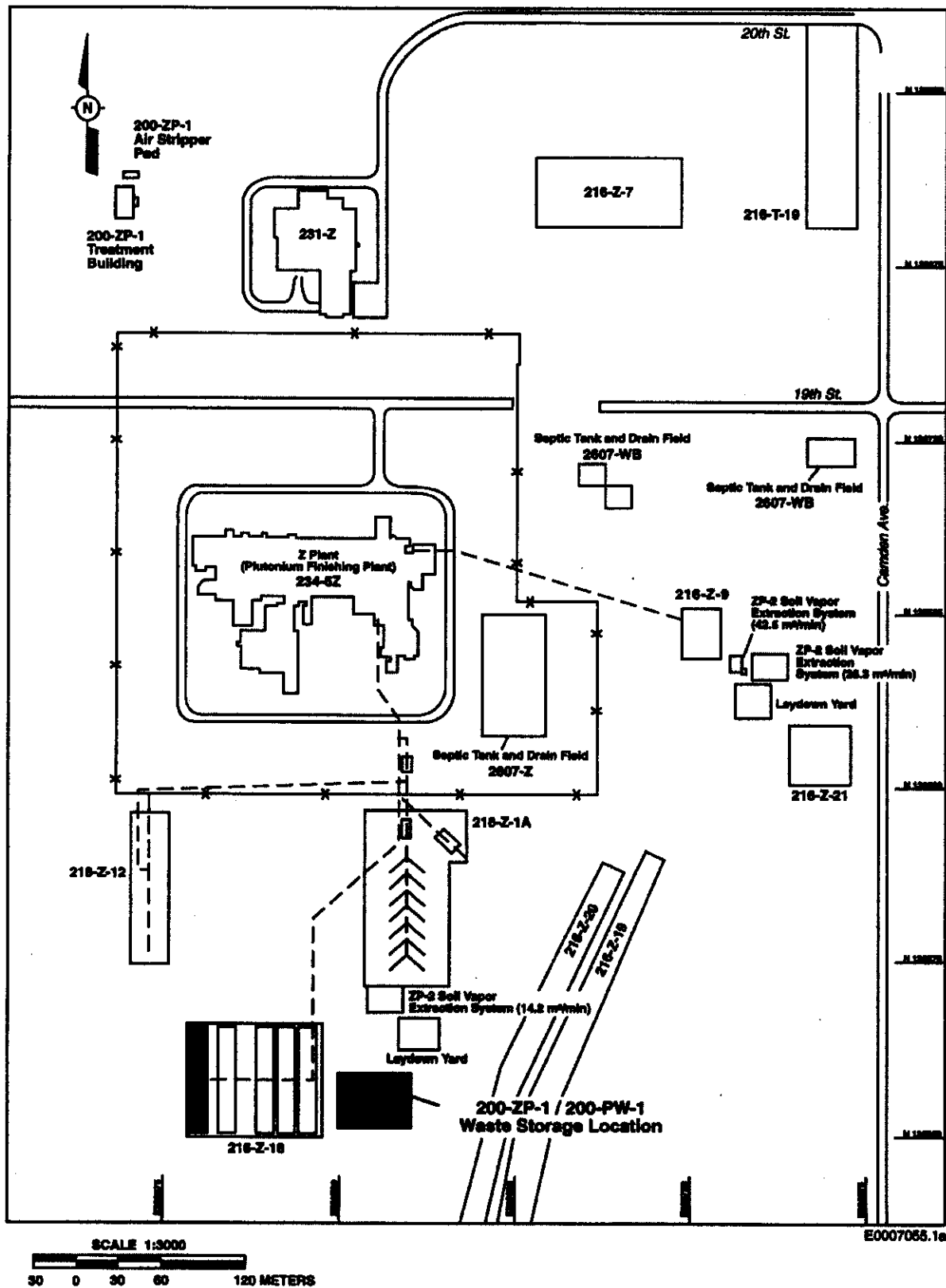


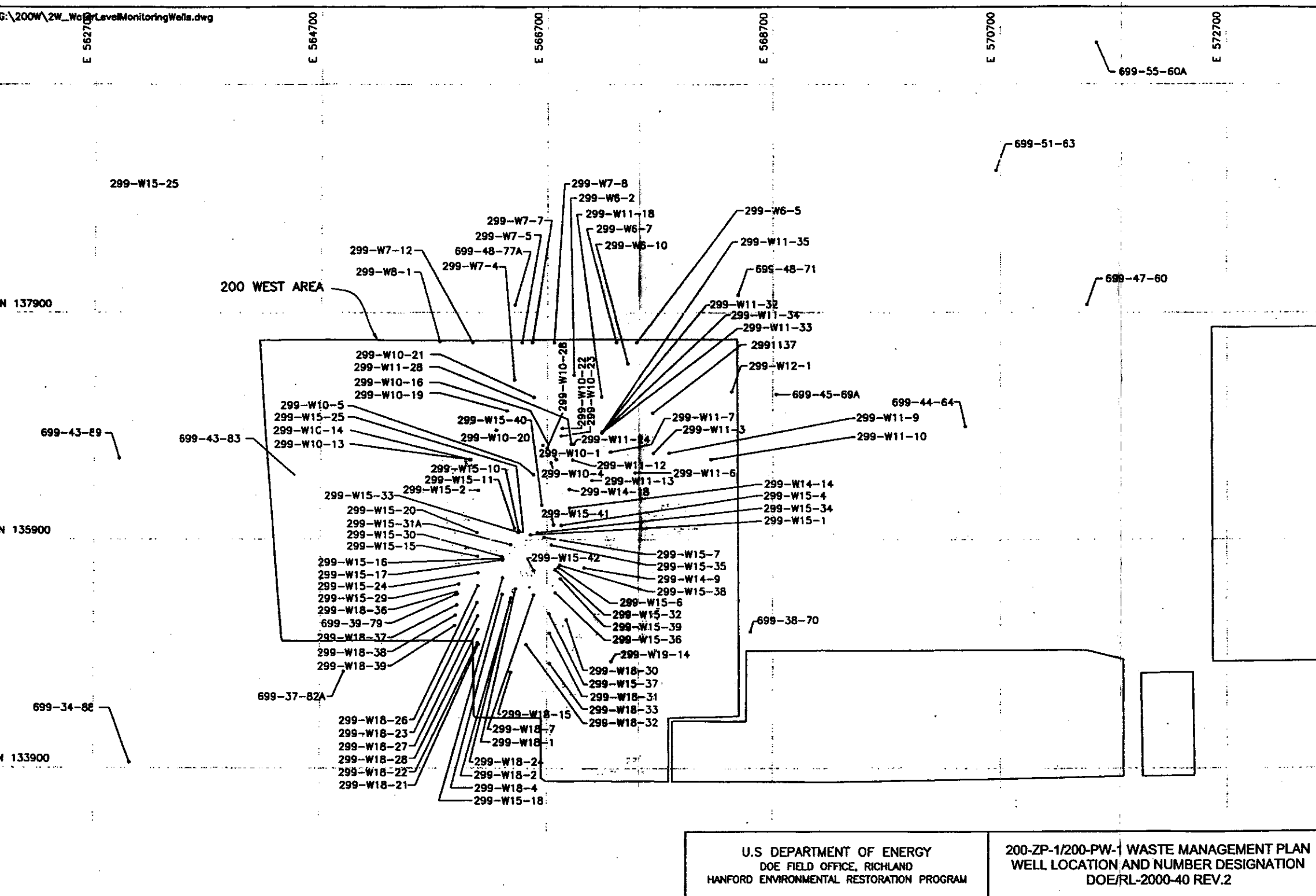
Figure 3. Well Monitoring and Hydrologic Test Locations
(Tables A-1, A-2, and A-3).

Figure 4. 200-PW-1 Soil Vapor Extraction/Monitoring Locations <2 m Depth.

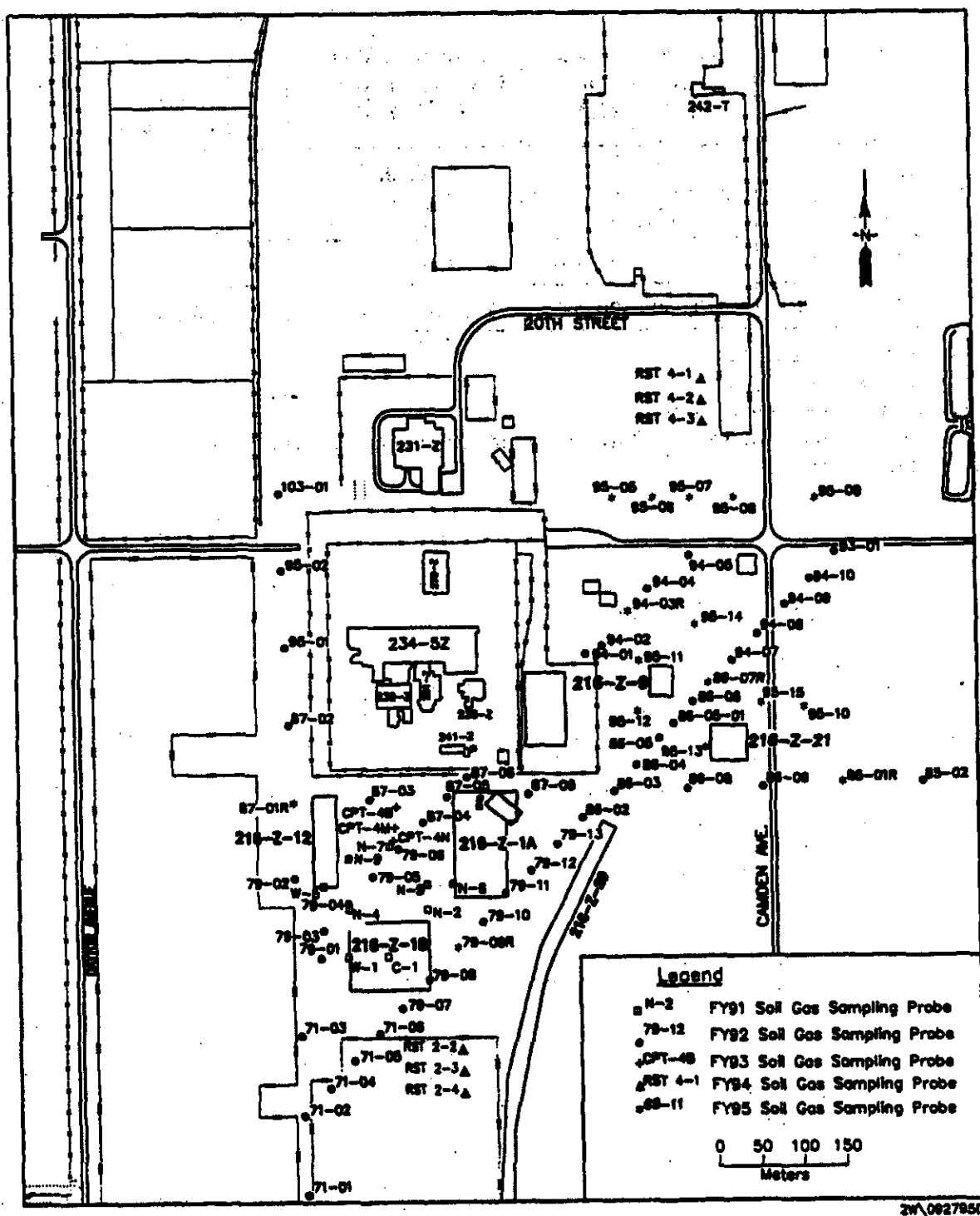
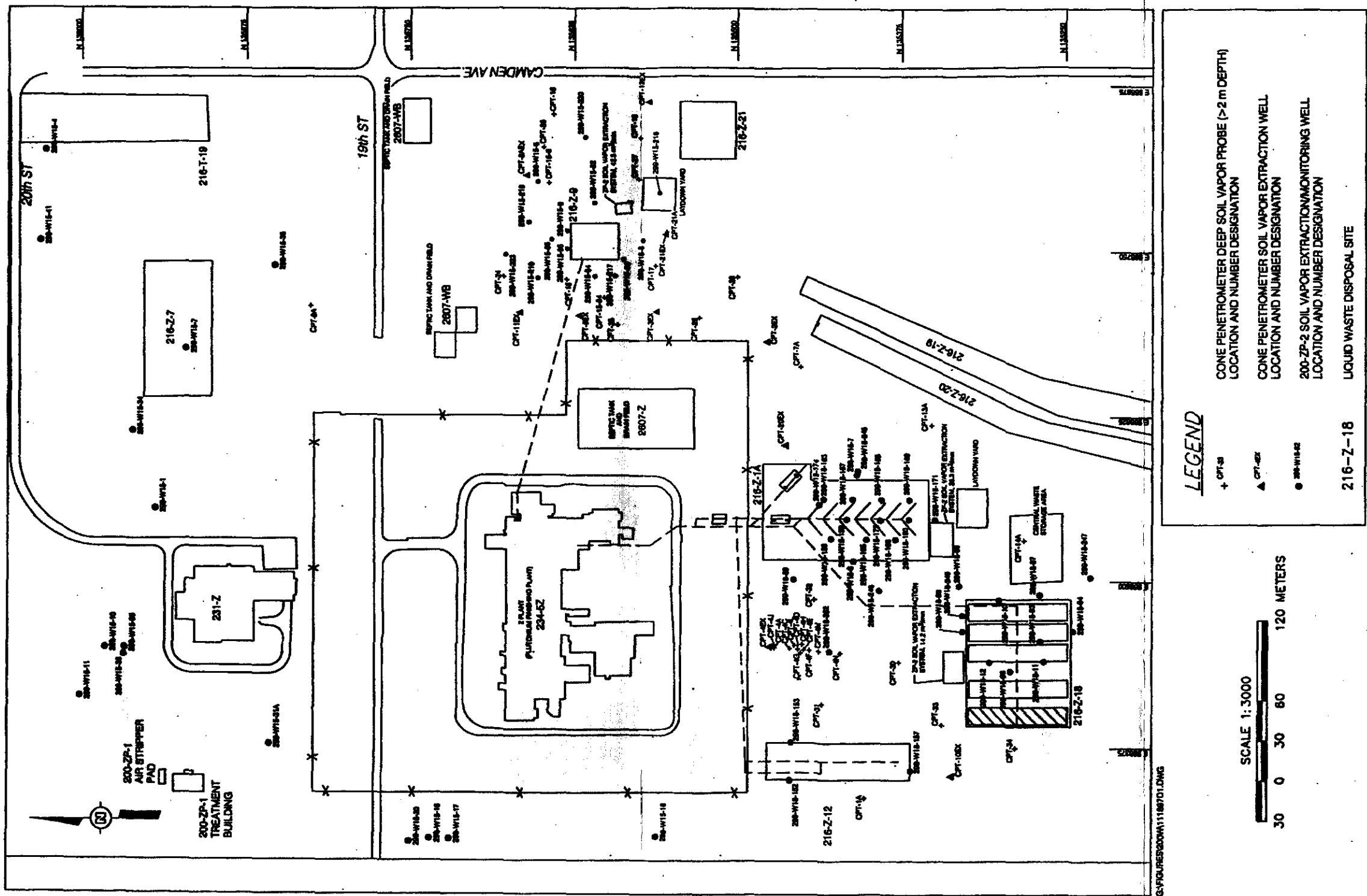


Figure 5. 200-PW-1 Vapor Extraction/Monitoring Locations
>2 m Depth.



7.0 REFERENCES

- 40 CFR 261, "Identification and Listing of Hazardous Waste," *Code of Federal Regulations*, as amended.
- 40 CFR 268, "Land Disposal Restrictions," *Code of Federal Regulations*, as amended.
- 40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," *Code of Federal Regulations*, as amended.
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APPENDIX A
200-ZP-1 WELL LISTS

APPENDIX A**200-ZP-1 WELL LISTS****Table A-1. 200-ZP-1 Water Level Monitoring Well List.**

299-W10-4	299-W15-35
299-W10-13	299-W15-36
299-W10-14	299-W15-37
299-W10-16	299-W15-38
299-W11-3	299-W15-39
299-W11-9	299-W15-40
299-W11-10	299-W15-41
299-W11-12	299-W15-42
299-W11-24	299-W18-1
299-W11-28	299-W18-2
299-W11-32	299-W18-4
299-W11-33	299-W18-7
299-W11-34	299-W18-15
299-W11-35	299-W18-21
299-W14-9	299-W18-22
299-W14-14	299-W18-23
299-W14-765	299-W18-24
299-W15-1	299-W18-26
299-W15-4	299-W18-27
299-W15-7	299-W18-28
299-W15-10	299-W18-30
299-W15-11	299-W18-31
299-W15-15	299-W18-32
299-W15-16	299-W18-33
299-W15-17	299-W18-36
299-W15-18	299-W18-37
299-W15-20	299-W18-38
299-W15-24	299-W18-39
299-W15-25	299-W19-14
299-W15-29	699-34-88
299-W15-30	699-37-82A
299-W15-31A	699-38-70
299-W15-32	699-39-79
299-W15-33	699-43-83
299-W15-34	699-43-89

Appendix A – 200-ZP-1 Well Lists**Table A-2. 200-ZP-1 for Hanford Groundwater Monitoring
Project Test Plan for Hydrologic Field Tests**

299-W22-46	299-W22-50
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Table A-3. 200-ZP-1 Chemical Monitoring Well List.

299-W6-2	299-W11-10	299-W15-31A	299-W22-45
299-W6-3	299-W11-12	299-W15-32	299-W22-46
299-W6-5	299-W11-13	299-W15-33	299-W22-48
299-W6-6	299-W11-18	299-W15-34	W99-W22-49
299-W6-7	299-W11-24	299-W15-35	299-W22-50
299-W6-10	299-W11-30	299-W15-36	299-W22-79
299-W7-1	299-W11-32	299-W15-38	299-W22-80
299-W7-3	299-W11-37	299-W15-39	299-W22-81
299-W7-4	299-W11-39	299-W15-40	299-W22-82
299-W7-5	299-W11-40	299-W15-41	299-W22-83
299-W7-7	299-W11-41	299-W15-42	299-W22-84
299-W7-8	299-W11-42	299-W15-43 ^a	299-W22-85
299-W7-9	299-W12-1	299-W15-44 ^a	299-W23-4
299-W7-11	299-W14-5	299-W15-763	299-W23-15
299-W7-12	299-W14-6	299-W15-765	299-W23-19
299-W8-1	299-W14-9	299-W18-1	299-W23-20
299-W10-1	299-W14-13	299-W18-4	299-W23-21
299-W10-4	299-W14-14	299-W18-21	299-W26-7
299-W10-5	299-W14-15	299-W18-22	299-W26-12
299-W10-8	299-W14-16	299-W18-23	299-W26-13
299-W10-13	299-W14-17	299-W18-24	299-W27-2
299-W10-14	299-W14-18	299-W18-27	699-34-88
299-W10-17	299-W14-19 ^a	299-W18-28	699-37-82A
299-W10-19	299-W15-1	299-W18-30	699-38-70
299-W10-20	299-W15-2	299-W18-31	699-39-79
299-W10-21	299-W15-6	299-W18-32	699-43-89
299-W10-22	299-W15-7	299-W18-40	699-44-64
299-W10-23	299-W15-10	299-W19-4	699-45-69A
299-W10-24	299-W15-11	299-W19-12	699-47-60
299-W10-25	299-W15-15	299-W19-41	699-48-71
299-W10-26	299-W15-16	299-W19-42	699-48-77A
299-W10-27	299-W15-17	299-W19-44	699-48-77C
299-W10-28	299-W15-18	299-W19-45	699-48-77D
299-W11-3	299-W15-24	299-W22-2	699-51-63
299-W11-6	299-W15-25	299-W22-10	699-55-60A ^b
299-W11-7	299-W15-30	299-W22-44	

^a Wells to be installed in FY03^b Formerly 699-51-60

APPENDIX B

**EXPEDITED RESPONSE ACTION VAPOR EXTRACTION/MONITORING
LOCATIONS**

APPENDIX B**EXPEDITED RESPONSE ACTION VAPOR EXTRACTION/MONITORING
LOCATIONS****Table B-1. 200-PW-1 Soil Vapor Extraction/Monitoring Locations. (6 Pages)**

CPT Probe	Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Type
CPT-1A	35	55	68	91		Probes
CPT-2	46					Rod
CPT-3	52					Rod
CPT-4	103					Rod
CPT-4A	10	25	50	75	91	Probes
CPT-4B	5	25	50	75	90	Probes
CPT-4C	10	25	50	75	107	Probes
CPT-4D	10	25	40	75	99	Probes
CPT-4E	10	25	75	103		Probes
CPT-4F	10	25	50	75	109	Probes
CPT-4G	100					Probes
CPT-4H	75					Probes
CPT-4J	25					Probes
CPT-4L	50					Probes
CPT-4M	5	25	49	66	80	Probes
CPT-4N	6	25	47			Probes
CPT-5	48					Rod
CPT-7A	32	52				Probes
CPT-8A	113					Rod
CPT-9A	60	70	91			Probes
CPT-10	107					Rod
CPT-11	75					Rod
CPT-12	47					Rod
CPT-13A	9	30	50	70		Probes
CPT-14A	12	21	40	61		Probes
CPT-15	12	26	46			Probes

Table B-1. 200-PW-1 Soil Vapor Extraction/Monitoring Locations. (6 Pages)

CPT Probe	Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Type
CPT-16	10	25	45	65		Probes
CPT-17	10	25	50			Probes
CPT-18	15	35	50	75		Probes
CPT-20	81					Rod
CPT-21	96					Rod
CPT-21A	45	65	86			Probes
CPT-24	45	70	95	118		Probes
CPT-25	20	32	52			Probes
CPT-26	28	48	68			Probes
CPT-27	15	33				Probes
CPT-28	40	60	87			Probes
CPT-29	23	46				Probes
CPT-30	28	48	68			Probes
CPT-31	25	50	76			Probes
CPT-32	25	50	70			Probes
CPT-33	40	60	80			Probes
CPT-34	40	60	86			Probes
CPT W15-6/65 ft	65					Probes
CPT W15-84/39ft	39					Probes
299-W15-6	154	210	69	94		Well
299-W15-8	165	195	93	113		Well
299-W15-9	162	189	88	113		Well
299-W15-32	193.9	210				Well
299-W15-82	75	90				Well
299-W15-84	75	90	166	196		Well
299-W15-85	83	98				Well
299-W15-86	107	137				Well
299-W15-95	73	98	129	159		Well
299-W15-216	174.5	184.5	70	80		Well
299-W15-217	106	121				Well
299-W15-218	180.5	195.5	98.5	113.5		Well
299-W15-219	167	182	87	102		Well

Table B-1. 200-PW-1 Soil Vapor Extraction/Monitoring Locations. (6 Pages)

CPT Probe	Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Type
299-W15-220	80	95	155	170		Well
299-W15-223	102.7	117				Well
299-W18-1	195	226				Well
299-W18-2	200	226				Well
299-W18-6	190	226	94.5	124.5		Well (passive sve)
299-W18-7	168.5	226				Well (passive sve)
299-W18-9	180	217				Well
299-W18-10	147	218	97	127		Well (passive sve)
299-W18-11	180	218	97	127		Well (passive sve)
299-W18-12	177.5	218				Well (passive sve)
299-W18-87	122	127	62	65.5	30-35.5	Well
299-W18-89	105	127				Well
299-W18-93	60	74				Well
299-W18-94	65	75				Well
299-W18-95	80	80				Well
299-W18-96	122	132				Well
299-W18-97	60	72				Well
299-W18-98	63	74				Well
299-W18-99	90	100				Well
299-W18-150	110	115	62	87		Well
299-W18-152	86	116				Well
299-W18-153	75	105				Well
299-W18-157	78	108				Well
299-W18-158	117	122	72	92		Well
299-W18-159	89	119				Well
299-W18-163	89.5	116.5	52.5	77.5		Well
299-W18-165	94	124				Well
299-W18-166	96	126				Well
299-W18-167	86	126.5				Well
299-W18-168	94	124				Well
299-W18-169	93	123				Well
299-W18-171	17.5	22	53.5	73.5	112-127	Well

Table B-1. 200-PW-1 Soil Vapor Extraction/Monitoring Locations. (6 Pages)

CPT Probe	Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Type
299-W18-174	106.5	126.5				Well
299-W18-175	87	117				Well
299-W18-246	165	175	120	130		Well (passive sve)
299-W18-247	162	172	119	129		Well (passive sve)
299-W18-248	123.5	138.5				Well
299-W18-249	122	137				Well
299-W18-252	165	185	113	133		Well (passive sve)
W15-218SST/ 86 ft	86					Stainless steel tube
W15-219SST/ 70 ft	70					Stainless steel tube
W15-219SST/ 130 ft	130					Stainless steel tube
W15-219SST/ 155 ft	155					Stainless steel tube
W15-220SST/ 52 ft	52					Stainless steel tube
W15-220SST/ 118 ft	118					Stainless steel tube
W15-220SST/ 185 ft	185					Stainless steel tube
W18-252SST/ 100 ft	100					Stainless steel tube
W18-252SST/ 145 ft	145					Stainless steel tube
W18-252SST/ 210 ft	210					Stainless steel tube
71-01/ 5 ft	5					Shallow probe
71-02/ 5 ft	5					Shallow probe
71-03/ 5 ft	5					Shallow probe
71-04/ 5 ft	5					Shallow probe
71-05/ 5 ft	5					Shallow probe
71-06/ 5 ft	5					Shallow probe
79-01/ 5 ft	5					Shallow probe
79-02/ 5 ft	5					Shallow probe
79-03/ 5 ft	5					Shallow probe
79-04/ 5 ft	5					Shallow probe
79-05/ 5 ft	5					Shallow probe
79-06/ 5 ft	5					Shallow probe
79-07/ 5 ft	5					Shallow probe
79-08/ 5 ft	5					Shallow probe
79-09R/ 5 ft	5					Shallow probe

Table B-1. 200-PW-1 Soil Vapor Extraction/Monitoring Locations. (6 Pages)

CPT Probe	Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Type
79-10/ 5 ft	5					Shallow probe
79-11/ 5 ft	5					Shallow probe
79-12/ 5 ft	5					Shallow probe
79-13/ 5 ft	5					Shallow probe
85-01R/ 5 ft	5					Shallow probe
85-02/ 5 ft	5					Shallow probe
86-02/ 5 ft	5					Shallow probe
86-03/ 5 ft	5					Shallow probe
86-04/ 5 ft	5					Shallow probe
86-05/ 5 ft	5					Shallow probe
86-05-01/ 5 ft	5					Shallow probe
86-06/ 5 ft	5					Shallow probe
86-07R/ 5 ft	5					Shallow probe
86-08/ 5 ft	5					Shallow probe
86-09/ 5 ft	5					Shallow probe
87-01R/ 5 ft	5					Shallow probe
87-02/ 5 ft	5					Shallow probe
87-03/ 5 ft	5					Shallow probe
87-04/ 5 ft	5					Shallow probe
87-05/ 5 ft	5					Shallow probe
87-06/ 5 ft	5					Shallow probe
87-09/ 5 ft	5					Shallow probe
93-01/ 5 ft	5					Shallow probe
94-01/ 5 ft	5					Shallow probe
94-02/ 5 ft	5					Shallow probe
94-03R/ 5 ft	5					Shallow probe
94-04/ 5 ft	5					Shallow probe
94-05/ 5 ft	5					Shallow probe
94-07/ 5 ft	5					Shallow probe
94-08/ 5 ft	5					Shallow probe
94-09/ 5 ft	5					Shallow probe
94-10/ 5 ft	5					Shallow probe

**Appendix B – Expedited Response Action
Vapor Extraction/Monitoring Locations**

DOE/RL-2000-40
Rev. 3

Table B-1. 200-PW-1 Soil Vapor Extraction/Monitoring Locations. (6 Pages)

CPT Probe	Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Type
95-01/ 5 ft	5					Shallow probe
95-02/ 5 ft	5					Shallow probe
95-05/ 5 ft	5					Shallow probe
95-06/ 5 ft	5					Shallow probe
95-07/ 5 ft	5					Shallow probe
95-08/ 5 ft	5					Shallow probe
95-09/ 5 ft	5					Shallow probe
95-10/ 5 ft	5					Shallow probe
95-11/ 5 ft	5					Shallow probe
95-12/ 5 ft	5					Shallow probe
95-13/ 5 ft	5					Shallow probe
95-14/ 5 ft	5					Shallow probe
95-15/ 5 ft	5					Shallow probe
103-01/ 5 ft	5					Shallow probe
C-1/ 5 ft	5					Shallow probe
N-2/ 5 ft	5					Shallow probe
N-4/ 5 ft	5					Shallow probe
N-5/ 5 ft	5					Shallow probe
N-6/ 5 ft	5					Shallow probe
N-7/ 5 ft	5					Shallow probe
N-9/ 5 ft	5					Shallow probe
W-1/ 5 ft	5					Shallow probe
W-5/ 5 ft	5					Shallow probe
RST 2-2/ 5 ft	5					Shallow probe
RST 2-3/ 5 ft	5					Shallow probe
RST 2-4/ 5 ft	5					Shallow probe
RST 4-1/ 5 ft	5					Shallow probe
RST 4-2/ 5 ft	5					Shallow probe
RST 4-3/ 5 ft	5					Shallow probe